## Chapter Three: Establishing a Market Area

The growth of antebellum Madison depended largely on settlement and development of its hinterland, and on the town's ability to capture and retain a portion of the trade of that hinterland.[1] During its early years, until after the War of 1812, the town had little growth, and probably little trade beyond its immediate area. When the proprietors laid out Madison in 1810, the population of Indiana Territory was 24,520, with approximately 16,000 people living within Madison's potential tributary area.[2] By 1815, a territorial census reported 63,897 persons living in the territory with perhaps 45,000 in the hinterland.[3] Settlement in the hinterland had more than doubled during these years, but much of it had taken place along the fringes of the Ohio River, at such settlements as Vevay. These settlements, like Madison, were entrepots serving Indiana Territory and competed with rather than augmented Madison's development.

The Indian menace and the uncertainties of the war years had restricted settlement largely to the fringe of the Ohio, but with war's end in 1816, settlement of the interior expanded as reflected in the growth of Madison. In 1819, Edmund Dana reported Madison had 821 inhabitants and was "one of

---

[1]The location of Second-order places which in central-place theory define the trade area of a First-order place (Figure 1) and the development of the Madison and Indianapolis Railroad as a transport route (Figure 3) formed the basis for estimating the extent of Madison's hinterland.

[2]U. S., Third Census of the United States, 1810 (Washington, 1811), 85-87.

[3]Annals of the Congress of the United States (1815-1816), 14 Cong., 1 Sess. (Washington, 1854), 459.

the most beautiful and flourishing towns in the state."[4] By 1820 the population of the new state had more than doubled since 1815, from 63,897 to 147,178 with 85,000 to 88,000 people in the area contiguous to Madison.[5] In the same year a local census reported 890 persons living in the town.[6] Since Lanier recalled no more than 150 persons living there in 1817, Madison's growth more than kept pace with that of its hinterland. Perhaps more important, this growth suggests that Madison had established a sizeable tributary area from which it drew surplus produce for processing and marketing and for which it provided manufactured goods.[7]

Madison derived much of its importance, as Dana wrote in 1819, "from its central position, by standing in one of the most northerly bends of the Ohio; thereby presenting one of the nearest points of Ohio navigation to that extensive body of rich land, at and around the Delaware towns, which yet remain uncultivated."[8] The Delaware towns lay north of the

---

[4]Dana, Geographical Sketches, 118-19.

[5]U. S., Fourth Census of the United States, 1820 (Washington, 1821), 39-40.

[6]Madison Indiana Republican, September 7, 1820.

[7]The term "tributary area" is used to identify a region contiguous to Madison with which its business and industry carried on direct trade. Madison's tributary area formed a part of its hinterland which was a broader, less well defined contiguous region that extended over a larger area. Considerable evidence exists to indicate that there can be no precise boundary for trade or tributary area. Every commodity or service has its own particular area, which overlaps similar areas of other centers. However, "it is possible to describe generalized, composite trade areas, though the boundaries become vaguer and the zones of overlap wider": John Bush, "The Hierarchy of Central Places in Southwestern Wisconsin," The Geographical Review, XLIII (Jan., 1953), 397. It is in this "generalized" sense that this chapter has attempted the identification of Madison's tributary area.

[8]Dana, Geographical Sketches, 118-19.

Wisconsin glacial boundary in the vicinity of the future site of Indianapolis. Correctly and perceptively, at this early date, Dana recognized the relation between this rich yet uncultivated land and the future development of Madison. Until the town captured the trade of this area, it had only limited opportunities for growth. The numerous other river towns with which it competed inhibited expansion to the east or west, and the broken, poor soil of Madison's immediate hinterland could not produce the surplus required for growth of large towns. As a means of measuring Madison's success in extending its trade or tributary area to the north, this study has used a set of ideas developed by geographers called central-place theory (Appendix A).

Only a handful of settlements dotted Madison's hinterland in 1811, mainly scattered along the Ohio River and the Whitewater Valley. Hardly more than hamlets, they differed little in either size or function; they were way stations on migration routes rather than producer centers. John Scott's Indiana Gazetteer could report by 1826 settlements sparsely spread over the area, ranging in size from a few families to two places with populations of over 1,000.[9] Morris Birkbeck described the process by which these settlements developed as he saw it in southern Indiana in 1817:

> On any spot where a few settlers cluster together, attracted by ancient neighbourhood, or by the goodness of the soil; or vicinity to a mill, or by whatever cause, some enterprising proprietor finds in his section what he deems a good scite for a town: he has it surveyed and laid out in lots, which he sells, or offers for sale by auction
>
> The new town then assumes the name of its founder:--a storekeeper builds a little frame store, and sends for a few cases of goods; and then a tavern starts up, which becomes the residence of

---

[9] John Scott, The Indiana Gazetteer (Centerville, 1826), passim.

> a doctor and a lawyer, and the boarding-house of the store-keeper, as well as the resort of the weary traveller: soon follow a blacksmith and other handicraftmen in useful succession: a schoolmaster, who is also the minister of religion, becomes an important accession to this rising community. Thus the town proceeds, if it proceeds at all, with accumulating force, until it becomes the metropolis of the neighbourhood. Hundreds of these speculations may have failed, but hundreds prosper; and thus trade begins and thrives as population grows around these lucky spots; imports and exports maintaining their just proportion. One year ago the neighbourhood of...Princeton was clad in "buckskin," now the men appear at church in good blue cloth, and the women in fine calicoes and straw bonnets.
>
> The town being fairly established, a cluster of inhabitants, small as it may be, acts as a stimulus on the cultivation of the neighbourhood: redundancy of supply is the consequence, and this demands a vent. Water mills, or in defect of water power, steam mills, rise on the nearest navigable stream, and thus an effectual and constant market is secured for the increasing surplus of produce. Such are the elements of that accumulating mass of commerce, in exports, and consequent imports, which will render the Mississippi the greatest thoroughfare in the world.[10]

These elements would not only render the Mississippi the "greatest thoroughfare in the world," but they indicated the gradation of settlement from hamlet to city that geographers mean when they speak of an hierarchical order of urban centers. Replace Birkbeck's term "elements" with the geographers' term "functions" (Appendix A) and the two come close to saying the same thing. The urban centers in Madison's hinterland can be divided functionally into five orders related to population, and ranked from Fifth-order to First-order, with Fifth the lowest order and First the highest order (Appendix B).[11]

---

[10]Birkbeck, Notes on a Journey in America, 105-06.

[11]Because of the geographers' classification of urban centers on the basis of function does not fit the antebellum urban center, Appendix B provides a system of classification which more or less accurately represents the urban reality of the period. The five orders shown in this appendix follow Christaller's central-place model (Appendix A, Figure 5).

Fifth-order settlements performed the most rudimentary services, the processing and craft functions that served the smallest market area. These settlements had a general store, a post office and a tavern, or a combination of these. They provided simple processing such as grist or saw milling, and had a few craftmen such as blacksmiths and carpenters. The larger of these occasionally had a doctor but he did not represent one of the normal functions. Until after the War of 1812, Madison was a settlement of this order. Scott in 1826 described Abington, in Wayne County, characteristic of these Fifth-order places, as "a small post village" which "contains about 30 or 40 inhabitants, two inns, a blacksmith shop, a fulling mill, and a carding machine."[12] By 1860 a church had become part of Fifth-order places and those places had become the homes of resident farmers as well but otherwise their functions remained unchanged. The Indiana State Gazetteer for that year described a Fifth-order place: Fredonia in Crawford County, a post village, contained two general stores, one hotel, and a few merchantile trades.[13]

Fourth-order settlements, as was true of all higher orders, performed all the functions of the lower order as well as distinguishing functions that formed the basis of their greater size. The service functions of this order included a common school, a printing office, and retail marketing in specializing establishments such as grocery and drug stores. This order included the professions of law and medicine and

---

[12]Scott, Indiana Gazetteer (1826), 29.

[13]George W. Hawes, Indiana State Gazetteer and Business Directory for 1860 and 1861 (Indianapolis, 1860), 142.

virtually the whole range of craftsmen, with the exception of luxury crafts such as silversmith and watch-maker. In 1826 Scott described a typical center of this order, Centerville in Wayne County:

> It now contains between 40 and 50 families, and upwards of 200 inhabitants. There are 2 stores, 3 taverns, 1 grocery, 1 wagon-maker, 1 wheelwright, 2 plasterers, 1 tinner, 1 saddler, 2 black-smiths, 2 cabinet-makers, 2 shoemakers, 1 millwright, 5 carpenters, 2 bricklayers, 1 tailor, 2 tanners, 3 physicians, 3 lawyers, a printing office, a masonic lodge, a post office, and a large school.[14]

The crafts expanded to include shingle-makers and dress makers by 1860, but no new processing functions appeared in this order with the exception of lumber yards. The gazetteer in 1860 described Laurel in Franklin County, typical of this order:

> It contains two churches, a large brick seminary, with 300 pupils in attendance, Masonic and Odd Fellows' lodges, four general stores, one grocery, and one or two drug stores, two extensive flouring mills, two or three tanneries, three hotels, and numerous diversi-fied trades and professions.[15]

The expansion of agricultural processing such as merchant mills, oil mills, and asheries, and simple manufacture, such as spinning mills; cotton and woolen mills, and iron foundries distinguished the functions of Third-order from Fourth-order settlements. In 1826 Scott reported Brookville in Franklin County as having "a large merchant mill, four stories high," and, adjoining the town, "two Cotton Factories."[16] The expanded service functions of these settlements included county offices, churches, and schools for boys and girls. The gazetteer in 1833 reported Shelbyville in Shelby

---

[14]Scott, Indiana Gazetteer (1826), 41.

[15]Hawes, Indiana State Gazetteer (1860), 255.

[16]Scott, Indiana Gazetteer (1826), 39.

County as having a Methodist church and two schools, one for males and one for females.[17] By 1860 weekly newspapers were found in Third-order places but agricultural processing and simple manufacturing remained their most important functions. George W. Hawes reported that Connersville in Fayette County in 1860 had "Two weekly newspapers, various mercantile establishments, including several flouring and grist mills, one foundry, one woolen factory, two pork houses, and several furniture and carriage manufactories, breweries, tanneries, &c."[18]

The beginnings of more complex or unusual manufacturing and the expansion of retail marketing characterized Second-order places. In 1826 Scott in reporting Lawrenceburg in Dearborn County as having "an extensive silk lace-factory...which supplies a large district of the country with this article," was describing a Second-order community.[19] Weekly newspapers and market houses also appeared by 1826 as regular retail marketing functions of this order. By 1860 Second-order places had expanded their marketing to include wholesale as well as retail functions. Jeffersonville had three wholesale and retail grocers, one wholesale and retail dry goods merchant, two commission merchants, and wholesale dealers in produce and in Queensware.[20] By 1860 Second-order centers manufactured agricultural machinery, steam engines, and boilers. In 1860

---

[17] The Indiana Gazetteer, or Topographical Dictionary (second edition, Indianapolis, 1833), 160.

[18] Hawes, Indiana State Gazetteer (1860), 79.

[19] Scott, Indiana Gazetteer (1826), 79-80.

[20] Hawes, Indiana State Gazetteer (1860), 229-30.

Madison had both steam engine and boiler-making factories, and Richmond had an extensive agricultural implement factory.[21]

The main distinguishing function performed by First-order centers in 1826 was banking and steamboat building. At that time the Farmers' and Mechanics' Bank made Madison a financial center and the boatyard at New Albany made it a center for steamboat building. By 1860 state offices, two daily newspapers, and heavy industry marked the main distinguishing characteristics of First-order centers. Lacking two of these, Madison could no longer be labeled as such. Indianapolis, the largest Indiana center of this order, and the state capital, performed all functions of this order, for it not only was the site of state offices, but it had two daily newspapers and the Indianapolis Rolling Mill Company.[22] New Albany lacked state offices, but it too, had two daily newspapers, and heavy industry in its several thriving ship yards.[23]

Figure 1 shows the spatial relationship of settlements in Madison's hinterland in 1826, while Table I shows the correlation of functions to population.

The pattern of settlements in Madison's hinterland in 1826 (Figure 1) resulted in part from the transport route along the Ohio River, and the internal river system that dissected the hinterland (Figure 3, Chapter 1). In the early years of settlement the rivers provided the easiest and best means of transportation. When the waters were high they served to carry

---

[21] Ibid., 653, 660.

[22] Ibid., 199.

[23] Ibid., 319.

Table I. Relationship of Orders to Population in Madison's Hinterland in 1826.

| | | Fifth Order | Fourth Order | Third Order | Second Order | First Order |
|---|---|---|---|---|---|---|
| | Population | 10-99 | 100-299 | 300-599 | 600-999 | 1,000-1,300 |
| | Number | 10 | 15 | 5 | 4 | 2 |
| Distinguishing Functions | Fifth Order | 10 | 15 | 5 | 4 | 2 |
| | Fourth Order | 1 | 11 | 5 | 4 | 2 |
| | Third Order | | 9 | 4 | 4 | 2 |
| | Second Order | | | 1 | 2 | 2 |
| | First Order | | | 1 | 1 | 1 |

Since the gazetteers used in this study give population figures but often not functional descriptions of settlements, it is necessary to infer such descriptions for some settlements from the population. Table I and subsequent matrixes indicate the correlation between the distinguishing functions of the several orders (Appendix B) and the population ranges into which the orders have been divided. The figure shown on the line marked "Number" in the matrix is the number of settlements for which the gazetteer gave both a population and a functional description. As Table I shows, the division of orders on the basis of population tend to be valid, with the exception of the Fourth-order column, which shows nine of the settlements having Third-order functions. The reason for this distortion is that many of these settlements were newly established county seats which, thought low in population, had service functions which ranged over the whole county. In the other orders the central-place principle that discrete groups of activities "also tend to have discrete population levels" appears valid, justifying the inference of a correlation between functions and population.

men and produce out of the hinterland; when low the stream bottoms served as roads for both men and wagons.[24] When Madison's proprietors laid out the town in 1810, two roads crossed the hinterland from east to west, and the Buffalo Trace penetrated it to the northwest from Clarksville

[24] Buley, Old Northwest, I, 463.

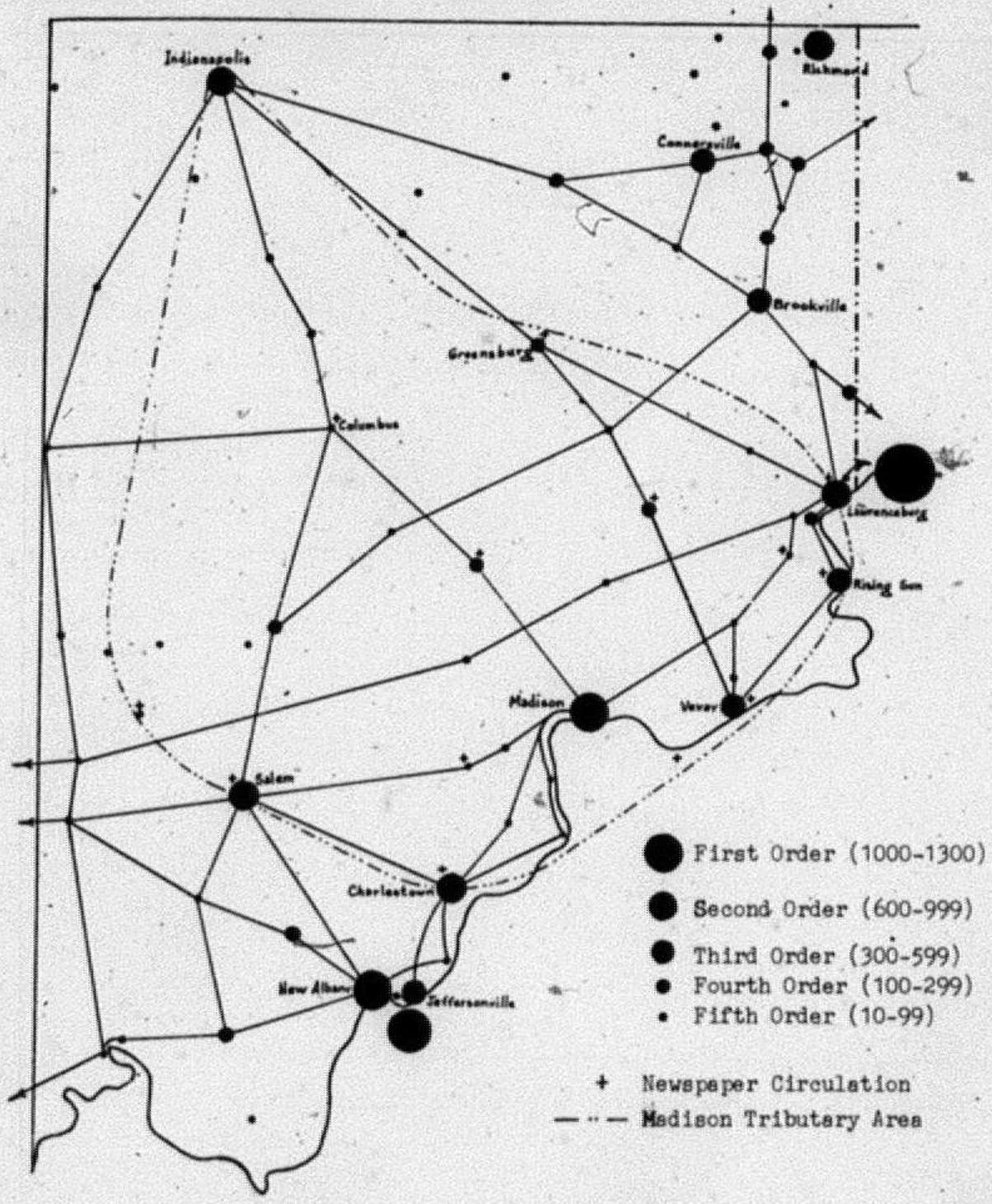



Figure 1. Central-places and transport routes in Madison's hinterland, 1826.

on the Ohio River.[25] Elias P. Fordham in 1817 wrote of southern Indiana, "Excepting on the banks of the Rivers Ohio and Wabash, this state is one vast forest, intersected by a few Blaze roads and two or three open roads."[26] John Melish's map for that year shows two roads crossing the area from east to west and one running northeast from Brownstown to Brookville along the "Old Indian Line."[27] In 1819 the Madison Indiana Republican made the first report noted in a Madison paper of a wagon road heading north from the town, 58 miles to the Flat Rock River, near the future site of Columbus.[28]

By 1826 roads penetrated Madison's hinterland, but the basic settlement pattern dictated by the rivers remained. The Indiana General Assembly in 1821 authorized the basic north-south road configuration shown in Figure 1, with Indianapolis as its hub, and the Ohio and Whitewater rivers as its destination.[29] While roads were laid out by statute, indicated on maps,

---

[25]George R. Wilson, Early Indiana Trails and Surveys (Indianapolis, 1919), 352-53.

[26]Fordham, Personal Narrative, 100. "Blaze roads" were paths marked through the forests by slices of bark chopped off the trees. Surveyed roads had the trees chopped down, with the stumps left to rot in the ground, and were called "open roads."

[27]John Melish, Map of Indiana (Philadelphia, 1817).

[28]Madison Indiana Republican, October 9, 1819.

[29]"An Act authorizing the laying of certain state roads in this state, and appropriating one hundred thousand dollars of the fund commonly called the three per cent. fund for opening the said roads," General Laws of Indiana (1821-1822), 152-69; Descriptions of the roads actually laid down under this law are found in: Scott, Indiana Gazetteer (1826), 138-39; and A. Finley, Pocket Map of Indiana (Philadelphia, 1829). Significantly missing from Figure 1 is any indication of a road from Richmond to Indianapolis. Scott describes a road from Dayton, Ohio, to Crawfordsville, Indiana, that passed through Richmond and Indianapolis, but the 1821 Act did not authorize such a road, and Finley's Map did not indicate a road between these two settlements. The reason for the Legislature's failure to authorize such a

identified in gazetteers, the road might be anything from a morass to "a passable 'affair.'"[30] Thus rivers remained for many years important routes. Continually through these years the Madison paper called for "improvement of the roads from Madison into the interior of the country." The problem Madison faced was that while it could secure maintainance of roads in Jefferson County, the interior counties, particularly Jennings and Bartholomew counties, found little need or desire to maintain their roads.[31] Thus, though the map shows a road from Madison to Indianapolis linking it with the rich land of the Delaware towns, the low order of feeder settlements along the route represents an important sign that in 1826 it had yet to develop as a support of Madison's growth.

Central-place theory, in defining a tributary area of a given order as bound by the location of the next smaller center, posits for Madison

---

road and Finley's failure to note one may have been in anticipation of the proposed National Road linking these towns. Lee Burns reports the survey of this road was not completed in Indiana until 1827, with travel beginning on it soon afterwards. Lee Burns, The National Road in Indiana (Indianapolis, 1919), 220-22.

[30]Buley, Old Northwest, I, 459.

[31]Madison Indiana Republican, May 15, 1824. In 1835, the editor of the Republican and Banner complained, "If the trade of the interior finds its way to and from the Ohio at some other point, we are blameless. This county has made a good road to her line, and even more, has contributed to improve the road between Sand creek and Clifty. We request our friends of Jennings and Bartholomew to bestir themselves immediately and attend to this matter, as it is the road between Vernon and Columbus which is complained of." Madison Republican and Banner, April 16, 1835. In 1831 a traveler from Columbus described the road between there and Vernon "as bad as the dexterity of our coachman was admirable, as he guided the coach and four between the holes in the road, and where this was impossible, through the wood." The road from Vernon to Madison he described as much improved. The Journey of Lewis David Von Schweinitz To Goshen, Bartholomew County in 1831, translated by Adolf Gerber (Indianapolis, 1927), 261.

as a First-order center in 1826 a theoretical trade area extending from the Second-order centers of Lawrenceburg on the east to Charlestown and Salem on the west, and Indianapolis and Richmond on the north. The east-west roads being older and better established, the theoretical east-west limits of Madison's tributary area extending from Salem in the west to Lawrenceburg in the east (where for a time a branch of the Farmers' and Mechanics' Bank was maintained), probably came close to reality, but the northern limit, particularly as it relates to Richmond, appears too distant. The proximity of the Whitewater River and the road to Cincinnati must surely have drawn the trade of the Dearborn Upland to that city. Writing in 1841, Charles Cist observed, "Very near the mouth of the Great Miami, the Whitewater River joins it, and may therefore, be considered as forming a separate valley; the whole of which lies in Indiana, but trades entirely with Cincinnati."[32]

The northwest area of Madison's hinterland contributed some commerce to Madison but with competing routes to the Whitewater River and to Lawrenceburg and hence to Cincinnati, and the poor condition of the road north, it seems unlikely that Madison at this time carried on much trade with the area north of an east-west line passing through Greensburg. Likely a portion of the import into this region moved through Madison but only a slight amount of the export did. One source indicates that farmers exported from the Martinsville area until the 1840s by flatboats down the White River to the Ohio and thence to New Orleans. "The return as far as Madison, was made by steamboat, a stock of foreign groceries

---

[32]Madison Western Clarion, May 29, 1822, and June 29, 1822.

usually being brought up. The remainder of the trip was by wagon, until railroads came into use early in the forties, and after that the journey by wagon was from Franklin."[33]

In 1822 the Madison Western Clarion indentified the extent of its newspaper circulation as shown in Figure 1.[34] Since newspaper circulation has been considered a reliable indicator of a market area, the Clarion's strikingly reinforces the extent of Madison's tributary area as suggested by central-place theory, and implied by fragmentary contemporary reports. Madison's tributary area in 1826 thus appears an ellipse elongated from east to west, with a protrusion north along its major transport route to Indianapolis. This protrusion provided trade for the growth of Madison through imports, though probably not exports.

Further evidence that Madison had not yet captured a large share of the trade north of the Greensburg line may be seen in its failure to grow at a rate comparable with the state or its hinterland. Between 1820 and 1830 the population of Indiana more than doubled, from 147,178 to 343,031, with the population of Madison's hinterland increasing over 130 percent, from about 88,000 to over 200,000.[35] During the same period the population

---

[33]Charles Blanchard, ed., Counties of Morgan, Monroe, and Brown (Chicago, 1884), 85. In the spring of 1831 Niles Weekly Register reported not less than 1,000 flatboats "entered the Ohio from the Wabash." Niles Weekly Register, XL (May 21, 1831), 194. The large numbers of flatboats descending the interior rivers of Indiana in the spring and fall contributed to the "Wabash Glut" at New Orleans. John G. Clark, The Grain Trade in the Old Northwest (Urbana, Ill., 1966), 24-25.

[34]Madison Western Clarion, May 29, 1822, and June 19, 1822.

[35]U. S., Fifth Census of the United States, 1830 (Washington, 1832), 144-47.

of Madison increased slightly less than 80 percent, from 980 to 1,752.[36] In the decade following 1820 the state organized eleven new counties in the hinterland, with an aggregate population of 64,021. Several of these new counties such as Marion and Rush lay north of the Greensburg line.

Figure 2 shows the spatial relationship of settlements in Madison's hinterland in 1833, while Table II shows the correlation of functions to population. A comparison of Table I (p. 81) and Table II indicates that each order increased in population in the years between 1826 and 1833, with the functional differences between orders becoming less clear than

Table II. Relationship of Orders to Population in Madison's Hinterland in 1833.

| | | Fifth Order | Fourth Order | Third Order | Second Order | First Order |
|---|---|---|---|---|---|---|
| | Population | 10-199 | 200-599 | 600-999 | 1,000-1,999 | 2,000-3,000 |
| | Number | 26 | 28 | 10 | 4 | 2 |
| Distinguishing Functions | Fifth Order | 26 | 28 | 10 | 4 | 2 |
| | Fourth Order | 2 | 24 | 10 | 4 | 2 |
| | Third Order | 8 | 13 | 8 | 4 | 2 |
| | Second Order | | 9 | 5 | 4 | 2 |
| | First Order | 1 | | 2 | 2 | 2 |

Source: The Indiana Gazetteer or Topographical Dictionary (second edition, Indianapolis, 1833).

in 1826. The dynamic quality of settlements in the hinterland accounts for the lack of clearer distinctions. Only a few of the settlements (such as Geneva in Bartholomew County and Palestine in Lawrence County)

[36] Madison Indiana Republican, September 23, 1830.

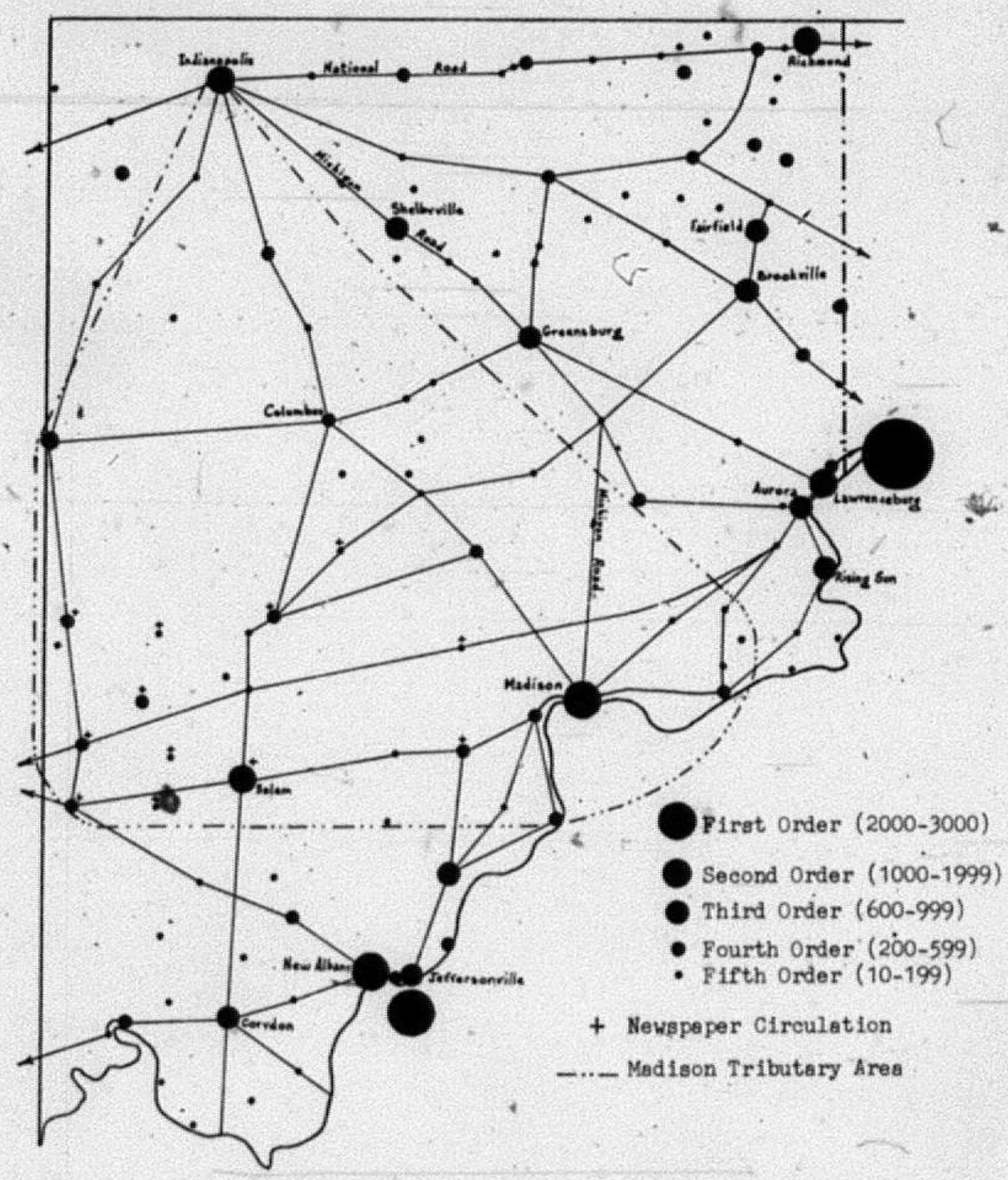



Figure 2. Central-places and major transport routes in Madison's hinterland, 1833.

declined in population and were unreported in the 1833 gazeteer; most settlements, like Madison, held to the hope of success and strove to acquire the functions of larger size communities. The large number of Fifth-order settlements (8) shown in Table II as having Third-order functions (Appendix B) resulted from seven county seats having populations under 200. Similarly the high number of Third-order settlements (5) shown as having Second-order functions reflected the growing trend of Third-order communities to acquire weekly newspapers. Such striving for advancement made the division of orders on the basis of population less valid than in 1826, but still useful.

Settlements in Madison's hinterland by 1833 had increased by two thirds, from 72 to 120 (Figure 2). Many of the new settlements, 24 of 48, were in the better lands north of the Greensburg line, where Madison trade was weakest or nonexistent.

Travel routes at this time remained much the same as they had been in 1826, with two notable exceptions, the National Road linking Richmond and Indianapolis and the Michigan Road from Madison by way of Greensburg to Indianapolis.[37] Extension of the National Road from Richmond to Indianapolis might have aided the growth of Madison by increasing Indianapolis-directed commerce, and hence Madison commerce because it was the nearest town to Indianapolis on the Ohio River, via the Indianapolis-Columbus route,

---

[37]Travel along the National Road from Richmond to Indianapolis began soon after completion of the survey of the road in 1827. Burns, National Road, 220-21. In 1833 the gazetteer for that year termed this "the first road, in usefulness and importance, in the State." Indiana Gazetteer (1833), 15. Geneal Prather, "The Construction of the Michigan Road, 1830-1840," Indiana Magazine of History, XL (Sept., 1944), 243-79; David H. Burr, Indiana [Map] (New York, 1833).

had it not been for the poor condition of the latter road.[38] In 1834 the Madison Republican and Banner printed a letter describing this route:

> I have recently travelled the Columbus road to this place and find it in a most wretched condition. Carriages of any description travel it at great difficulty and risk. Deep mud holes, broken bridges, steep hills, and sliding banks, are innumerable, and unless something is done and that speedily, the traveller and teamster will from necessity abandon this road, and find some other leading into the interior.[39]

The "wretched condition" of the road remained, and the prophecy of the traveler came true. In 1835 the editors of the Madison Indiana Republican reported, "We are informed by a gentleman from Indianapolis, that a large portion of the goods destined for that place, imported from the East this spring, have been landed at Lawrenceburg, in consequence of the bad state of the road from this place to Indianapolis."[40]

Madison held great hopes for the Michigan Road. "When this road is opened so as to admit the passage of wagons, which will probably be next summer or fall," wrote the editors of the Madison Indiana Republican in 1830, "Madison will then receive a great portion of the trade of an extensive and fertile country, which has heretofore been enjoyed almost entirely by other places."[41] But this road never provided the hoped-for boom in

---

[38]Actually the National Road may have reduced Madison commerce by providing a land route to Indiana from Wheeling, Virginia, see Burns, National Road, 222ff.

[39]Madison Republican and Banner, April 17, 1834.

[40]Madison Republican and Banner, April 16, 1835; the condition of the road from Lawrenceburg to Indianapolis also made travel difficult. In 1834 Jane Merrill reported the road so bad that she had to ride a horse rather than go by carriage on a trip from Lawrenceburg to Indianapolis; Jane Merrill to Caroline Martin, December 29, 1834, Jane Merrill Papers (Indiana Historical Society, Indiana State Library).

[41]Madison Indiana Republican, November 4, 1830.

Madison's trade because it could not compete with the older, more direct transport routes. The gazetteer for 1833 reported, "The very injudicious location of this road, while it increases the distance, will greatly diminish its utility."[42] In 1849, Samuel Merrill wrote that the Michigan Road had been laid out by such "a circuitous route...that parts of the road have never been much travelled."[43]

Reports on Madison newspaper circulation in 1834 suggest some expansion of the town's tributary area to the west, but the newspaper's failure to report circulation in the east perhaps meant its decline in that direction (Figure 2).[44] To the north and west the lack of significant increase in the size of feeder centers along the Madison-Columbus-Indianapolis route suggests that this transport route had not yet contributed much to Madison's growth. The growth of both Shelbyville and Greensburg along the older portion of the newly established Michigan Road, and virtual absence of any observable change along the new portion from Napoleon to Madison, points to the inability of Madison to expand its tributary area north and east of the Madison-Columbus route (Figure 2). Madison's tributary area in 1833 appears not to have changed much from 1826. Some shift had occurred in its location, from east to west, but Madison had yet to realize the all-important expansion of tributary area into the fertile lands north of the Wisconsin glacial boundary.

---

[42] Indiana Gazetteer (1833), 16.

[43] The Indiana Gazetteer or Topographical Dictionary (third edition, Indianapolis, 1849), 127.

[44] Madison Republican and Banner, July 17, 1834, and October 9, 1834.

The General Assembly of Indiana in 1836 passed an Internal Improvements Act which had a number of provisions affecting Madison's hinterland. These included: a macadamized turnpike road from New Albany to Vincennes by way of Greenville and Paoli; a railroad, if practicable, and if not, a macadamized road from Jeffersonville and New Albany to Crawfordsville by way of Salem, Bedford, and Bloomington; a Whitewater Canal, extending from the National Road down the valley of the Whitewater River to Lawrenceburg and "above the National Road as far as may be practicable"; and a railroad from Madison through Columbus, Indianapolis and Crawfordsville, to Lafayette.[45] Three years after these public works began, the state, responding to adverse economic conditions, abandoned them in mid-construction, having expended several million dollars on their development.[46]

By 1850 private enterprise had completed two of the works begun by the state, the Whitewater Canal to Hagerstown north of Cambridge City, and the Madison Railroad to Indianapolis (Figure 3). When the state ceased work on the canal, it had been completed from the Ohio River to Brookville, and about half the work from Brookville to Cambridge City was finished. The 1841-1842 session of the General Assembly chartered the Whitewater Valley Company that extended the canal 15 miles to Laurel in October 1843; 12 miles farther to Connersville, in June 1845; and completed it to Cambridge City in October of the same year. The Hagerstown Canal Company completed construction of the canal to that town in

---

[45] General Laws of Indiana (1835-1836), 6-21.

[46] Logan Esarey, Internal Improvements in Early Indiana (Indianapolis, 1912), 118.

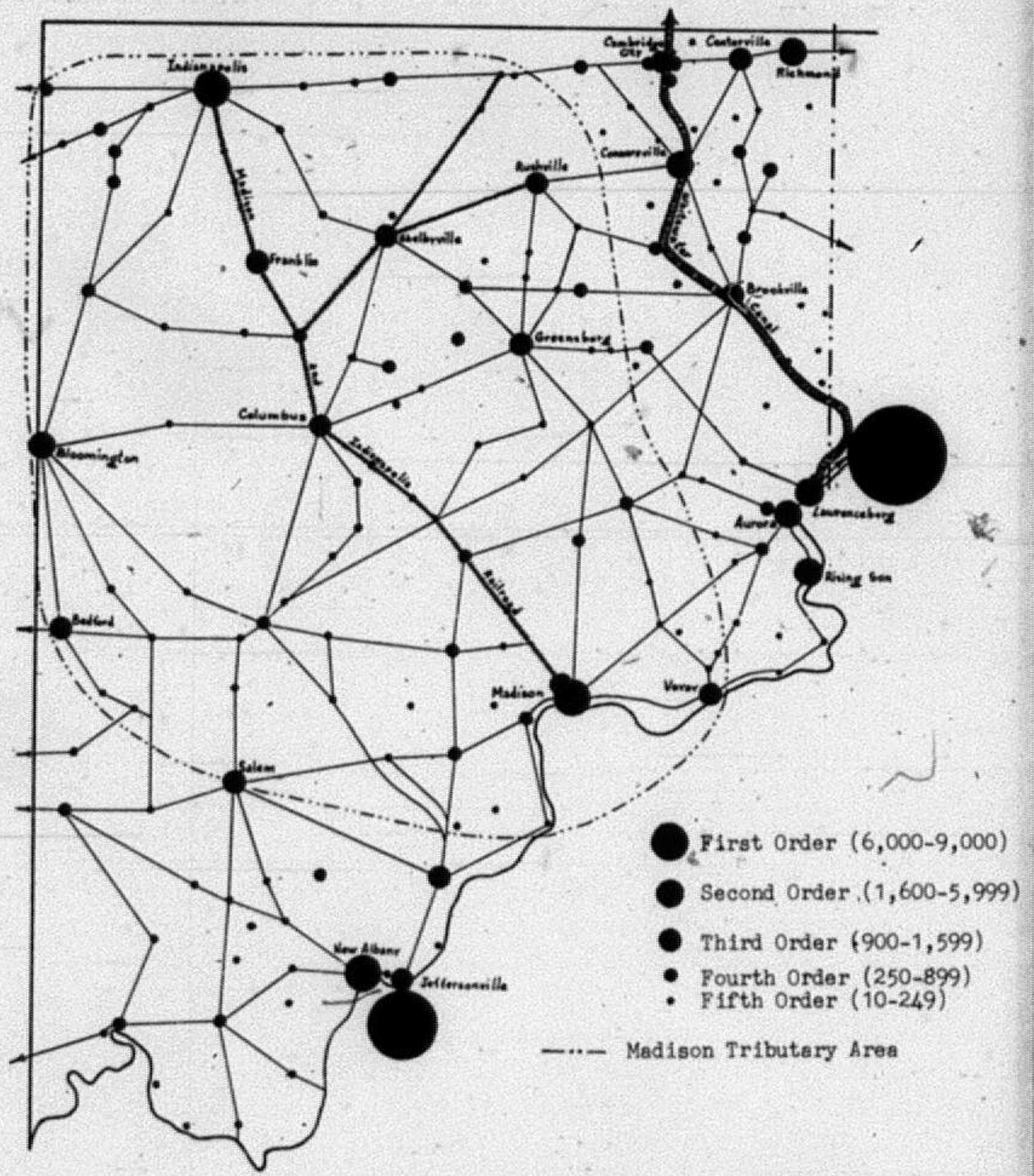



Figure 3. Central-places and major transport routes in Madison's hinterland, 1849-50.

1847.[47] Built in a valley too steep to hold it and coming to completion in the last years of the preindustrial era, the canal enjoyed only a short period of success before the railroads usurped its functions.[48] This was probably long enough to prevent Madison from breaking the hold of Cincinnati and expanding its tributary area into this portion of its hinterland, as suggested by the fact that it never expanded its railroad beyond Rushville (Figure 3).

The state began work on the Madison Railroad in 1836, soon after passage of the Internal Improvements Act. While work proceeded on the incline plane up the hill behind Madison, the road was completed from the top of the hill to Graham, 17 miles, in November 1838; to Vernon, 22 miles from Madison, in June 1839; and to Queensville in June 1841. In 1841 the state also completed work on the incline plane, enabling trains to run directly from Madison to Queensville, 28 miles away. Madison interests in 1842 formed the Madison and Indianapolis Railroad Company to assume operation of the road, becsuse as Lanier, a leader in gaining private control of railway, reported, "The Legislature of 1842, finding the public works unprofitable and expensive, with no funds to complete them, and dull prospects of profit from them, if completed, passed the act providing for their extension by private companies."[49] The newly organized company

---

[47]Margaret Duden, "Internal Improvements in Indiana, 1818-1846," Journal of Indiana History, V (Dec. 1909), 164.

[48]Esarey, Internal Improvements, 122.

[49]Indiana Documentary Journal (1839-1840), 92-97; "Report of a Committee Appointed by the Directors of the Madison and Indianapolis Rail Road Company," September 28, 1844 (Jefferson County Library, Madison, Indiana).

resumed the building of the railroad to Indianapolis, completing 9.5 miles to Elizabeth in September 1843; 6.6 miles to Columbus, in July 1844; 10.5 miles to Edinburg in September 1845; 10 miles to Franklin in September 1846; and to Indianapolis, 86 miles from Madison, on October 1, 1847. Other Madison railroad interests, headed by Michael G. Bright and John Woodburn, completed a lateral branch of the road to Shelbyville, 16 miles from Edinburg, in July 1849; and lateral branches to Rushville and Knightstown, 20 and 27 miles respectively, in the fall of 1850.[50]

The building of the Madison and Indianapolis Railroad provided Madison with a transport route that challenged the older river and road routes in much of the northern portion of its hinterland. Only along the Whitewater Canal did Madison fail to expand its tributary area, as indicated by the growth of Connersville and Cambridge City. Nonexistent in 1833, Cambridge City had become a Third-order settlement by 1849, while Connersville had become a Second-order one. West of the Dearborn Upland Madison established control of a tributary area that included Indianapolis in the north, Bloomington to the west, and Rushville to the east (Figure 3). The American Railroad Journal in October 1850, reported cars loaded with agricultural produce moving over the Shelbyville and Rushville branch railroads to Madison.[51] The Indiana State Journal expressed the importance of the railroad in expanding Madison's tributary area: "Indianapolis has changed. Friday, Oct. 1st 1847, was an end of an era in our history. On that day

---

[50]C. G. Sappington, "The Madison and Indianapolis Railroad," Indiana Magazine of History, XII (Sept., 1916), 237; Madison and Indianapolis Railroad, Sixth Annual Report (Indianapolis, 1850), 7.

[51]American Railroad Journal, XXIII (Oct. 5, 1830), 631.

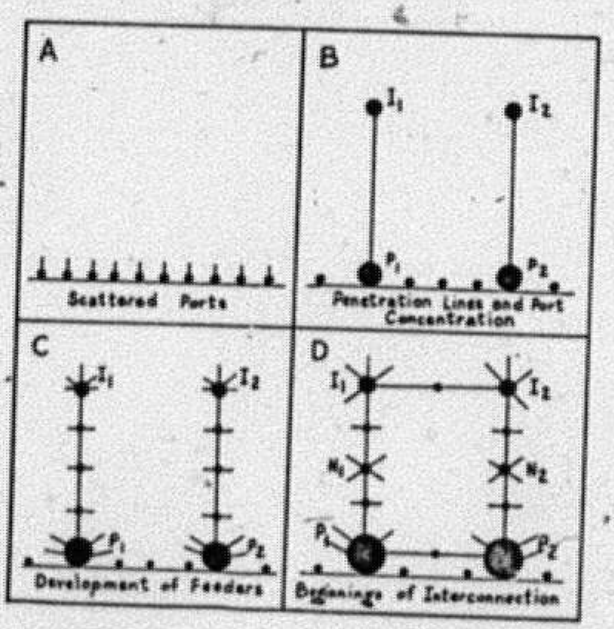
we were linked with commerce."[52]

From 1819 to 1850 the main line of Madison's northern penetration lay along the Madison-Columbus-Indianapolis highway. The Madison and Indianapolis Railroad completed the development of this transport route. At an early date, feeder centers grew up that focused on the road, particularly at Vernon, Columbus, and Franklin. Madison, however, did not have the full benefit of this route in the establishment of its tributary area until completion of the railroad to Indianapolis, as indicated by the growth of northern feeder centers, particularly at Columbus and Franklin (Figure 3). The railroad stimulated town growth, which accrued to the benefit of Madison.[53] The railroad's transport dominance over a considerable part of the northern portion of Madison's hinterland explains in large measure the growth of Madison in the decade of the forties. Between

---

[52] Indianapolis Indiana State Journal, November 2, 1847.

[53] The process of Madison's northern penetration of its hinterland from 1811 to 1850 came very close to that theoretically formulated in the Taafe-Morrill-Gould transport model.



1840 and 1850, Madison's population more than doubled from 3,798 to 8,021.[54]

Madison's transportation primacy lasted only a few short years, from 1847 to 1853. By 1860 the best years had passed and Madison had declined to a Second-order community. Table III indicates the correlation between

Table III. Relationship of Orders to Population in Madison's Hinterland in 1860.

| | Fifth Order | Fourth Order | Third Order | Second Order | First Order |
|---|---|---|---|---|---|
| Population | 10-299 | 300-1199 | 1,200-4,999 | 5,000-9,999 | 10,000-20,000 |
| Number | 68 | 45 | 19 | 4 | 2 |
| Fifth Order | 68 | 45 | 19 | 4 | 2 |
| Fourth Order | 28 | 42 | 19 | 4 | 2 |
| Third Order | 9 | 10 | 15 | 4 | 2 |
| Second Order | | 8 | 8 | 3 | 2 |
| First Order | | 6 | 3 | 2 | 2 |

Source: George W. Hawes, Indiana State Gazetteer and Business Directory for 1860 and 1861 (Indianapolis, 1860).

"The first phase (A) consists of a scattering of small ports and trading posts along the seacoast....With the emergence of major lines of penetration (B), hinterland transport costs are reduced for certain ports. Markets expand circles $P_1$ and $P_2$. Feeder routes begin to focus on the major ports and interior centers (C). These feeder routes give rise to a sort of hinterland piracy that permits the major port to enlarge its hinterland [tributary] area at the expense of adjacent smaller ports. Small nodes begin to develop along the main lines of penetration, and as feeder development continues (D), certain of the nodes, exemplified by $N_1$ and $N_2$, become focal points for feeder networks of their own. Interior concentration then begins, and $N_1$ and $N_2$ pirate the hinterlands [tributary] area of the smaller nodes on each side."

Edward J. Taafe, Richard L. Morrill, and Peter R. Gould, "Transport Expansion in Underdeveloped Countries," Geographical Review, LIII (Oct., 1963, 503-05.

[54]U. S., Seventh United States Census, 1850 (Washington, 1853), 755-56.

population and distinguishing functions of communities in Madison's hinterland in 1860. As the table shows, although the population increased in each order between 1850 and 1860, the division of the orders on the basis of function (Appendix B) tended to persist. The high number of Fifth-order places (28) shown as performing Fourth-order functions resulted from the relatively large number of professional people, particularly doctors and preachers, appearing in the larger population settlements of the Fifth-order. Similarly the high number of Third-order places (8) having Second-order functions primarily resulted from many of these settlements' having a wholesale produce dealer, or occasionally a more specialized wholesale dealer, such as Connersville's wholesaler of wines and liquors. After passage of Indiana's free banking law in 1852, a number of communities had commercial banks, which also tends to distort the functional distinction in the communities of the higher-population range. Finally, Richmond's iron and steel warehouse and Jeffersonville's state prison helped distort the clear functional distinction between First- and Second-order places in the table.

Figure 4 shows the spatial relationship of the five orders in Madison's hinterland in 1860, and the main transportation extension of the 1850s. The map reveals the changes in identified settlements since 1850, from 162 settlements to 228, an increase of about 40 percent, with almost all this increase beyond Madison's tributary area. The most striking change related to the number and orientation of main transportation routes, as represented by the railroads in Figure 4. Madison had ceased to develop according to the Taafe-Morrill-Gould transport model, which anticipates interconnection of centers and the formation of trunk-line routes or "main streets" that

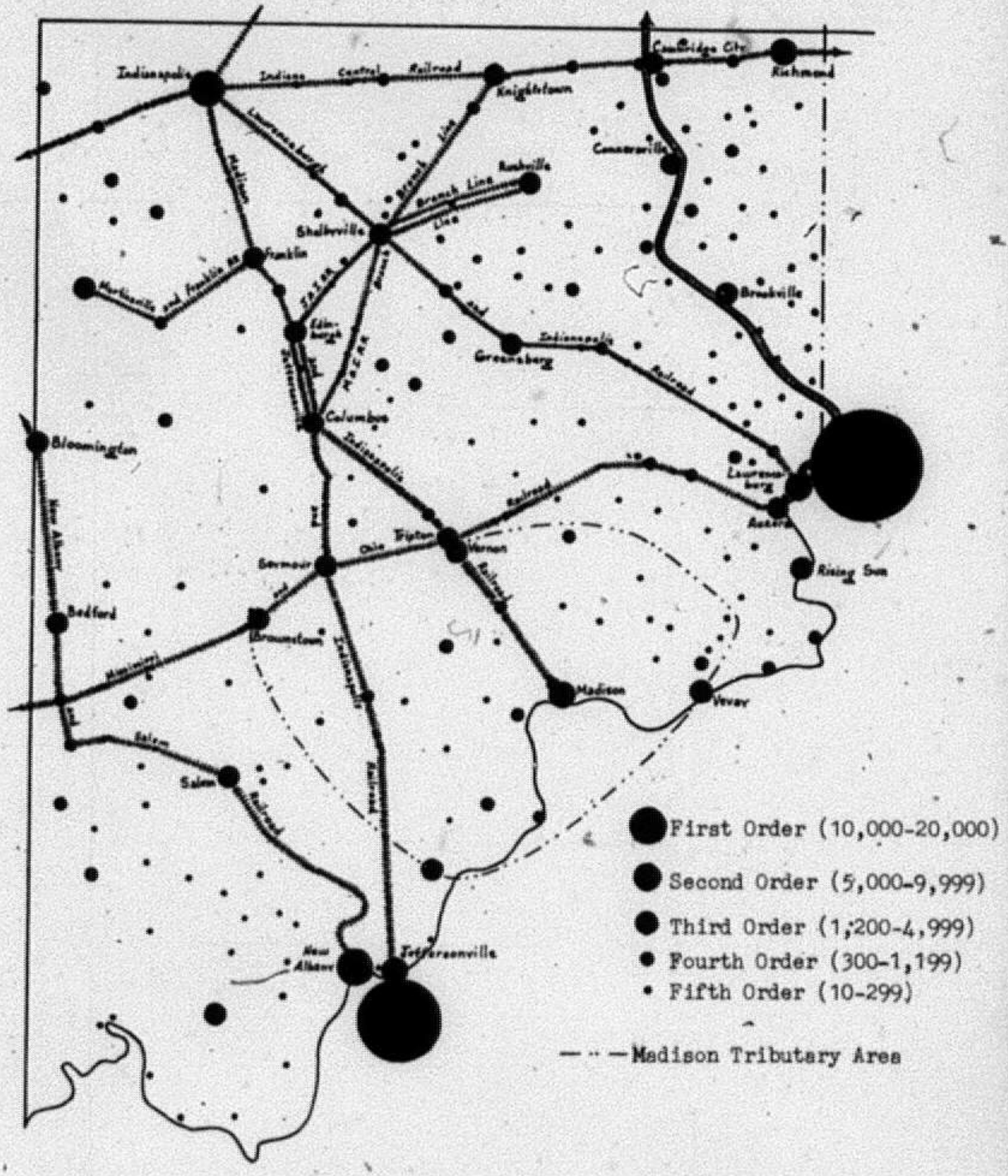



Figure 4. Central-places and major transport routes in Madison's hinterland, 1860.

focus on primary ports. With a virtual railroad monopoly among port cities in Indiana, Madison appeared in 1850 on the threshold of becoming such a port, but by 1860 no less than five railroads bisected Madison's hinterland, none of which focused on Madison. Interestingly, the rail transportation network in 1860, which focused primarily on Indianapolis, came strikingly close to the road system that existed in 1826, with the major differences being Jeffersonville's penetration of, and Vevay's isolation from, the Madison hinterland (Figure 1).

The break in Madison's transportation primacy began in 1850, when railroad interests in New Albany and Jeffersonville began laying rival tracks north. It took three years for these roads to complete the penetration of the hinterland, the New Albany and Salem Railroad reaching Bloomington in July 1853 and the Jeffersonville road completing its line to Edinburg in May 1853.[55] Failure to negotiate a right of transit over the Madison and Indianapolis line after it reached Columbus in 1852 forced the Jeffersonville road to construct a parallel line to Edinburg. At the same time, the Jeffersonville road gained control of the feeder lines of the Madison and Indianapolis Railroad from Edinburg to Shelbyville, Rushville, and Knightstown.[56] October 1853 marked the completion of two other railroads in Madison's hinterland: the Lawrenceburg and Upper Mississippi Railroad Company finished construction of its road from Lawrenceburg to Indianapolis; and the Indiana Central Railroad company its road from

---

[55] American Railroad Journal, XXIII (May 18, 1850), 310; XXVI (July 23, 1853), 476.

[56] Ibid., XXV (Sept. 4, 1852), 570; XXVI (May 7, 1853), 290-91.

Richmond to Indianapolis.[57] Completion of these roads in rapid succession marked 1853 as a key date in the fortunes of Madison. Such was the prosperity and confidence of Madison that many residents failed to perceive the threat in fragmentation of their tributary area. When the Terre Haute Express prophesied Madison's ruin with the building of rival railroads, the Madison Daily Courier replied, "The ruin exists only in the imagination of those in whom the 'wish is father to the thought.' Rival railroads cannot ruin the prospects of Madison; they must improve those prospects materially."[58]

Madison attempted to counter the invasion of her tributary area by expansion of her railroad network. In May 1853 the Madison road assumed operation through a five-year lease of the newly constructed Martinsville and Franklin Railroad, 26 miles long; and in December completed a line from Columbus to Shelbyville.[59] Then in January 1854 the stockholders of the Madison and Indianapolis and the Peru and Indianapolis railroads consolidated their lines, thereby almost doubling the length of the Madison road, to 159 miles.[60] At the time the merger appeared beneficial to Madison because Peru, 72 miles north of Indianapolis, was a very important port on the Wabash and Erie Canal. But in June the Ohio and Mississippi

---

[57] Ibid., XXVI (Nov. 19, 1853), 747; (Nov. 26, 1853), 763. For a discussion of railroad-building in Indiana between 1850 and 1855 see Victor M. Bogle, "Railroad Building in Indiana, 1850-1855," Indiana Magazine of History, LVIII (Sept., 1962), 211-32.

[58] Madison Daily Courier, August 12, 1853.

[59] Elmer G. Sulzer, Ghost Railroads of Indiana (Indianapolis, 1970), 78; Madison Daily Courier, December 27, 1853.

[60] American Railroad Journal, XXVII (Jan. 14, 1854), 26.

Railroad opened its road from Cincinnati to Seymour on the Jeffersonville road, establishing direct rail connections between Cincinnati and a point on the Ohio River opposite Louisville.[61] Little remained of Madison's tributary area. In 1854 the Madison, Indianapolis, and Peru Railroad for the first six months of its operation reported "a total of receipts on the entire road of $178,677.97 being $21,389.86 less than the receipts of the Madison road alone for the corresponding period in 1853."[62] Even as late as 1860 the Madison railroad fought to retain an important transport position, by completing a lateral line between Shelbyville and Rushville but the fortunes of the road continued to decline.[63] It was sold at foreclosure in 1862 and finally, in 1866, consolidated with the Jeffersonville road to form the Jeffersonville, Madison and Indianapolis Railroad Company.[64]

Timothy Flint in 1828 praised Madison's location as "central to a great extent of flourishing back country."[65] In large measure Madison's ability to capture the trade of this "flourishing back country," and make

---

[61] Ibid. (June 10, 1854), 373.

[62] Madison and Indianapolis Railroad, Eleventh Annual Report (New York, 1854), 10.

[63] Madison Daily Courier, April 13, 1860. The tributary area for Madison in 1860, suggested by central-place theory, probably comes very close to what actually existed (Figure 4). The pattern of rail transport routes as it developed in the decade of the fifties, the location of the next lower order of settlement, and the decline of Madison from a First- to Second-order community support such an inference.

[64] Wylie J. Daniels, The Village at the End of the Road (Indianapolis, 1938), 86.

[65] Flint, A Condensed Geography, II, 150-51.

it tributary to its economic development determined its history. The capture that occurred was only temporary; perhaps could never have been anything but temporary. In his memoirs written in 1870, Lanier observed that he "had learned from the early success of that road what might be expected of other lines more favorably situated."[66] Calvin Fletcher in 1836 reported in his diary:

> We [Edwin J. Peck and Fletcher] have been exchanging our views as to the future growth of Madison & both agree that the rail road approved beyond Columbus in this state in the direction of Madison was a waistful [sic] expenditure of public money--that Madison, left between Lawrenceburgh & Louisville & no road south, must always be a town of inferior grade compared with the two former places.[67]

Few if any persons in Madison in 1836 had the perceptiveness of Peck and

---

[66] Lanier, Sketch of the Life, 18.

[67] Gayle Thornbrough, ed., The Diary of Calvin Fletcher, 1817-1838 (Indianapolis, 1972), 333.

Fletcher doubtless meant "no road" of any significance because in 1836 a road of undetermined quality did extend from Milton, Kentucky, about 13 miles south to Bedford. The navigability of the Kentucky River, which entered the Ohio River at Port William (Carrollton) about 12 miles above Madison, probably explains Fletcher's reference. This river heads in the Cumberland mountains and drains much of the region south of Madison. It was navigable for flatboats and small craft for about a 150 of its 200 miles, and for steamboats, in good stages of water, as far as Frankfort, which lay about 60 miles south and east of Madison. (Cumings, Western Pilot, 47).

Madison had hope of establishing an important route south in 1836 and again in 1854 but neither materialized. In 1836 Madison promoters sought to run a railroad from Milton to the Lexington and Louisville Railroad, which was being built about 20 miles to the south. The proposal died because of opposition in Louisville to the creation of a direct route from the center of Indiana into Kentucky that by-passed Louisville. (Madison Republican and Banner, May 25 and June 8, 1836). A second opportunity came in 1854, when the Kentucky Legislature chartered a company to build a bridge across the Ohio River between Milton and Madison. Since the only bridge across the Ohio at that time was at Wheeling, Virginia, this would have provided Madison with a major route south. Fear that a bridge across the river would encourage slaves to run away brought an end to the proposal in Kentucky. (Madison Daily Courier, February 8, and March 28, 1854).

Fletcher, and most would have agreed with the editor of the Indiana Republican who reported in 1817, "The situation of Madison has been esteemed by travellers as one of the most eligible scites on the Ohio River; & only wants an enterprising population to give it that ascendency which its situation entitles it to."[68] Madison's success in reaching into its hinterland for trade between 1830 and 1850 appeared to give truth to the words of the Madison editor, but ultimately the judgment of Peck and Fletcher prevailed.

---

[68]Madison Indiana Republican, December 20, 1817.

## Appendix A

Geographers have developed "a theory of the location, size, nature, and spacing" of clusters of human activity, called central-place theory.[69] Among the several concepts of centrality, three have specific relevance in the identification of a tributary area for Madison: the nested hierarchical order of urban centers; the functional interrelationship of central places; and the linear influence of trade routes on the distribution of urban centers.

Two German scholars, Walter Christaller, a geographer, and August Loesch, an economist, laid the basis of central-place theory before World War II. Loesch began with the assumption of a region of homogeneous farms on a homogeneous plain, no occupants of which engaged in trade either inside or outside the region. If, in this region, he theorized, farmers perceived that specialization reduced costs and produced profits, then farmers would begin to specialize. Specialized production begins randomly over the plain; since transport costs increased the cost of production of an article with each reshipment, competition leads to the positioning of several activities at one site. Coopers and cabinet makers would find it most economical to settle near a saw mill. Transportation time and costs also increase with the distance traveled; therefore, specialized activities become evenly distributed over the plain. The time and cost

---

[69] Brian J. L. Berry, Geography of Market Centers and Retail Distribution (Englewood Cliffs, N. J., 1967), 3. For a discussion of the extensive body of literature developed by modern geographers and related to central-place theory see Brian J. L. Berry and Allan Pred, Central Place Studies: A Bibliography of Theory and Application (Philadelphia, 1961).

of transporting grain to a grist mill ensure the success of a second mill at the point where transport time and cost begin adversely to affect the farmer. Since some commodities are more bulky than others transporting more or less easily, there are different size trade areas. Lumber from a saw mill has a smaller market area than the ware of a silversmith. These varying gradations of trade areas "nest," i.e., spatially fall one within the other, thus, within the market area of a silversmith lies the market areas of several saw mills and, as Loesch concluded, the principle of a hierarchy of towns emerged.[70] As Allen K. Philbrick stated it, "The recognition of the nested hierarchical nature of areal units of organization is the key to geographical analysis of this complex maze of interrelationships."[71]

The general recognition of a hierarchy of urban centers has long existed as expressed in the commonly used terms--hamlet, village, town, small city, and city--for the "nested" units of organization in the hierarchy of central-place theory. What Loesch and other modern geographers have done is recognize that this hierarchy constitutes a system of central-places. As a system, each order or unit of organization functionally relates to the other, creating a homogeneous area, i.e., a region integrated with respect to its internal structure and functional organization.

---

[70]August Loesch, "The Nature of Economic Regions," Southern Economic Journal, V (July 1938), 71-78; Eugene Smolensky and Donald Ratajczak, "The Conception of Cities," Exploration in Entrepreneurial History, Second Series, II (Winter 1965), 100-01.

[71]Allen K. Philbrick, "Principles of Areal Functional Organization in Regional Human Geography," Economic Geography, XXXIII (Oct., 1957), 310.

Ideally the hierarchical central-place system, usually with a single focal point or dominant city, forms itself in the honey-comb market-area pattern shown in Figure 5.[72]

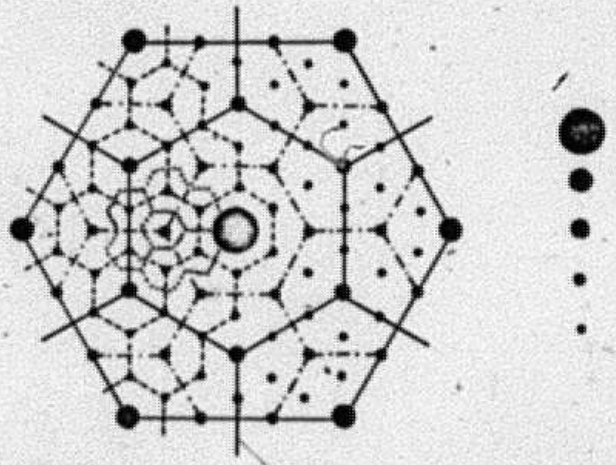


Figure 5. Ideal distribution of central-places and market areas according to Christaller.

Each central-place performs a specific group of "central functions," and is characterized by a related population level. The type or order of the "central functions" depends on the extent of the area served by the central-place. Hence, a functional threshold--a minimum population or volume of sales required to support a new economic addition to existing facilities--distinguishes the orders over a given region. Normally a central-place performs only those functions that its tributary area can support.[73] Further, each center of a higher (more populous) order performs

---

[72]Allan R. Pred, Behavior and Location: Foundations for a Geographic and Dynamic Location Theory (2 parts, Sweden, 1967), Part I, 102.

[73]Brian J. L. Berry and William L. Garrison, "The Functional Bases of the Central Place Hierarchy," Economic Geography, XXXIV (April, 1958), 146-47; Allan R. Pred, The Spatial Dynamics of U. S. Urban-Industrial Growth, 1800-1914 (Cambridge, 1966), 14, 26-37. Rigid connotations cannot be attached to the term "threshold," for it is unrealistic to

all the functions of the lower order center, plus the threshold functions that set it above the next lower order. The highest order central-place encompasses the tributary area of all five dimensions, performing all the functions of the lesser order as well as its own set of specific functions. As Philbrick explains, "In principle it must be recognized that every order of areal functional organization possesses the characteristics and interconnections of all its lower-ordered components."[74]

Theoretically the average trade area closely approximates a hexagon rather than a circle because it represents the mathematical resolution of adjacent circles covering a plane surface (Figure 5). The hexagonal trade area of a center increases in size as the size and complexity of that center increases. Transportation costs and travel time fix the limit of a given trade area as the costs of reaching one center increase progressively outward from the center in all directions. "Hence," as John Bush explains, "additional centers of like kind should always develop beyond the reach of any one center." Theoretically in accordance with W. J. Reilly's "law of retail gravitation" and Oiva T. Tuominen's "proportional range of influence," the pull exerted by a trade center varies directly with the size of the center, and decreases outward with increasing distance, smaller centers ordinarily not developing as close to large centers as to one another.[75]

---

assume that centers perform in any absolute sense only those functions supported by the tributary area. It is best to assume, as Pred does, that new functions "will not necessarily coincide with threshold achievement, but will occur within an 'entry Zone' overlapping both sides of that optimal level."

[74]Philbrick, "Principles of Areal Functional Organization," 316.

[75]Bush, "Hierarchy of Central Places," 390-93.

Thus, the location of the next smaller center of activity ordinarily defines the areal limit or tributary boundary of the next larger center (Figure 5).

The final factor in central-place theory relative to the identification of Madison's tributary area relates to transportation routes. Douglass C. North noted the importance of such routes in the location of central-places when he observed, "Nodes grow up because of special locational advantages that lower the transfer and processing costs of exportable commodities. Nodal centers become trading centers through which exports leave the region and imports enter for distribution throughout the area."[76] Theoretically intermediate-order places distribute themselves along a direct route between two higher orders, leaving the smaller orders aside. In theory also, trade routes project out from higher-order centers like the spokes of a wheel, with intermediate centers being located at equal intervals along the route. Hence, trade routes tend to distort the theoretical hexagonal market area by flattening it out along the line of the route. In the spatial relationship of central-places, trade routes have been important where long-distance transport has been a key factor in development.[77] Since long-distance transport played an important part in the growth of Madison from the beginning, an elongated, rather than hexagonal, tributary area would be expected.

Although the number of inhabitants of a given settlement results from

---

[76]Douglass C. North, "Location Theory and Regional Economic Growth," The Journal of Political Economy, LXIII (June, 1955), 251.

[77]Berry, Geography of Market Centers, 65-69; Robert E. Dickinson, The City Region in Western Europe (London, 1967), 35-37.

a multiplicity of factors, such as number of family dependents, retired persons, and persons employed outside the settlement, as well as those employed in it, the usual measure of the importance of a place is its population.[78] The advantage of this measure is that it reduces the diverse elements in a settlement to a single common denominator, while at the same time providing a fairly accurate measure for distinguishing between centers in the hierarchy of central-places. "Since the central places of each class possess a discrete group of activities, they also tend to have discrete population levels."[79] Indiana gazetteers are available for the years 1826, 1833, 1849, and 1860. These gazetteers give the location and estimates of population for settlements in Madison's hinterland. Three of the gazetteers, those for 1826, 1833, and 1860, include descriptions of the functions performed by many of the settlements. The functions reported in these gazetteers were analyzed by means of a frequency distribution according to population categories. In this way groups of functions based on settlement populations emerged, i.e., specific sized settlements tended to have specific functions. The grouping of functions in the five orders shown in Appendix B is the result of this procedure.

---

[78]Bush, "Hierarchy of Central Places," 382.

[79]Berry and Garrison, "Functional Bases," 147.